(1)

USSR
ELECTRONIC AND PRECISION EQUIPMENT

Number 1 **23 September 1958**

Prepared by

Foreign Documents Division
CENTRAL INTELLIGENCE AGENCY
2430 E. St., N. W., Washington 25, D.C.

PLEASE NOTE

This report presents unevaluated information selected from Russian-language publications as indicated. It is produced and disseminated as an aid to United States Government research, and is the first of a new series to be issued under this title.

USSR ELECTRONIC AND PRECISION EQUIPMENT

Table of Contents

Approved For Release 1999/08/25 : CIA-RDP78-03107A000100020001-8

I. ITEMS OF SPECIAL INTEREST

A. Machine Translation

A working Committee for Applied Linguistics has been created under the Section for Study of Speech of the Commission of Acoustics, Academy of Sciences USSR, in accordance with the decision of the conference on speech statistics.

The committee is comprised of the following members: N. D. Andreyev (Experimental Laboratory for Machine Translation, Leningrad State University), Yu. S. Bykov and L. A. Varshavskiy (Scientific Research Institute for Radio Electronics under Council of Ministers USSR), S. S. Vysotskiy (Institute of Russian Language), R. L. Dobrushin (mechanics and mathematics faculty, Moscow State University), N. I. Zhinklin (Institute of Psychology, Academy of Pedagogical Sciences RSFSR), L. R. Zinder (philological faculty, Leningrad State University), V. V. Ivanov (philological faculty, Moscow State University), A. R. Luriya (Institute of Defectology, Academy of Pedogogical Sciences RSFSR), V. I. Medvedev (Military and Medical Academy imeni S. M. Kirov), N. B. Pokrovskiy (Military and Engineering Academy for Communications), A. A. Reformatskiy (Institute of Language Studies, Academy of Sciences USSR), V. A. Uspenskiy (mechanics and mathematics faculty, Moscow State University; Division of Mathematical Logic and Mathematical Linguistics of the Laboratory for Electric Modeling of the All-Union Institute for Scientific and Technical Information of the State Scientific and Technical Committee under the Council of Ministers USSR, and of the Academy of Sciences USSR). Prof L. R. Zinder, Doctor of Philological Sciences, is the chairman of the committee.

In the field of application of mathematical methods and applied linguistics, the foremost task is the development of theoretical multiple methods and logical mathematical methods for describing the language system. The development of these methods has been started by both Soviet scientists (see Byulleten' po mashinnomu perevodu (Bulletin of the Association for Machine Translation), Moscow, 1957, No 1, 3, and 5) and foreign specialists in mathematical linguistics and machine translation (for example, see one of the newest articles by F. Harary and H. H. Paper, "Toward a General Calculus of Phonemic Distribution," Language, Vol 33, No 2, 1957, pp 143-169). The problem of utilizing mathematical methods for solving grammatical questions is of vital importance.

The Committee [for Applied Linguistics] has compiled a list of subjects which will be developed in 1958-1959. This list will be sent to all interested institutions to obtain additional suggestions, remarks, reports, and plans of work. On the basis of all this material, the committee will have to compile an all-union plan for coordination of research in the field of applied linguistics. Letters, plans, and reports addressed to the committee should

be sent to the following address: Leningrad, Universitetskaya Naberezhnaya, d. 11, LGU, Laboratoriya eksperimental'noy fonetiki, predsedatelyu komiteta po prikladnoy lingvistike (Laboratory of Experimental Phonetics, for the Chairman of the Committee for Applied Linguistics), Prof. L. R. Zinderu. In the future, simultaneously with the development of thematic recommendations and coordinating work, the committee proposes to organize conferences on applied linguistics and to publish corresponding collections of articles. The first All-Union Conference on Machine Translation will be called together at MGTsIIYa [Moscow State Central Research Institute for Language Studies?] in May 1958 with the participation of the committee. (Moscow, Voprosy Yazykoznaniya, No 3, 1958, pp 136-137)

[Comment: For information on the conference referred to above, see "Abstracts of the Conference on Machine Translation (May 15-21, 1958)," Moscow, 1958, translated by JPRS/DC, No 241.]

The Institute of Electronics, Automatics, and Telemechanics of the Academy of Sciences Georgian SSR is currently developing an experimental machine for automatic translation from Russian into the Georgian language and from Georgian into the Russian language. For this purpose a mechanical dictionary has already been compiled, and the statistical processing of words and text analysis has also been completed. (Stalinabad, Kommunist Tadzhikistana, 31 May 58)

[Comment: For additional information on machine translation, see the article, "Machine Talks With Man" in The Current Digest of the Soviet Press, Vol 10, No 37, 13 Aug 58, p 27, translated from Izvestiya 9 July 19[illegible]8, p 6.]

B. Earth Satellite Builders

On 25 March 1958, V. N. Novikov, Chairman of the Leningradskiy Sovnarkhoz (Council of National Economy), presented awards to workers of Leningrad plants whose skill was utilized in developing and launching the Soviet earth satellites. Among these were:

Leonid Alekseyevich Selivanov, a highly skilled optical instrument specialist, who had worked at his plant for 25 years.

Valentin Nikiforov, a highly skilled machinist.

Valentin Ivanov, a fitter at a plant.

Gennadiy Grachev, an electric welder at the same plant.

Semen Gerasimovich Zolin, a Class 7 lathe operator, who performed complicated operations in manufacturing the satellites. (Leningradskaya Pravda, 26 Mar 58)

[Comment: According to information compiled from Soviet published sources, there are at the very least 40 plants in Leningrad engaged in the manufacture of electronics equipment, precision machinery, instruments, and optical equipment, any of which could have contributed to the satellite program.]

C. Plants

Zlatoust Plant imeni Lenin

The Zlatoust Plant imeni Lenin will send artistic engraved metal products to the Brussels Fair. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 14 Mar 58)

[Comment: This appears to be the same Zlatoust Plant mentioned in connection with the former Ministry of General Machine Building in the newspaper Sovetskaya Rossiya of 1 September 1956 and 29 September 1956.

[The first article described the fine engraved metal products the Zlatoust Plant was famous for and criticized G. Kiselev, plant director, and the Ministry of General Machine Building for neglecting the production of these works of art.

[The second article consisted of an answer by Dalinger, late Deputy Minister of General Machine Building, that the plant would be given aid in producing its decorative articles.

[No information has been given in recent available published sources as to the main functions and products of the Zlatoust Plant or the former Ministry of General Machine Building, which was later absorbed into the Ministry of Defense Industry.

[According to Bolshaya Sovetskaya Entsiklopediya (Large Soviet Encyclopedia), Vol 17, pp 104-105, the Zlatoust Plant was founded as the Kosotur Plant in 1754. During the Soviet era it was renamed the Zlatoust Combine imeni V. I. Lenin, and evolved into a large plant engaged in the production of tools, machine tools, and agricultural machinery parts. It began the production of stainless steel in 1921. During the postwar Fourth Five-Year Plan, it began the production of self-propelled combines.

[However, the last known mention of the production of self-propelled combines at this plant in a Soviet published source was in 1949. According to Trud, 19 October 1949, the Zlatoust Self-Propelled Combine Plant imeni Lenin of the (former) Ministry of Agricultural Machine Building USSR was producing the S-4 self-propelled combine.]

Moscow Illumination Engineering Products Plant

The Moscow Illumination Engineering Products Plant is a medium-size plant engaged in large-series production. It makes use of all types of metalworking processes, and produces 116 type-designations of products.

The plant is now operating on a shopless basis. It is under the Moscow City Sovnarkhoz. -- V. Blokh, director, Moscow Illumination Engineering Products Plant (Moscow, Pravda, 14 Feb 58)

The Moscow Illumination Engineering Products Plant is operating on a shopless basis.

I. Povarov is chief technologist of the plant; L. Anokhov is chief mechanic; B. Simonov is chief accountant. (Moscow, Moskovskaya Pravda, 4 Mar 58)

[Comment: Although more than a full page of the source is dedicated to the plant's achievement in operating on a shopless basis, there is absolutely no hint as to the nature of its production.]

Recently, the Moscow Illumination Engineering Products Plant took important measures in simplifying its management system. The Moscow [Elektrosvet] Plant imeni Yablochkov is also a producer of illumination engineering products, and is trying to follow the example of the Illumination Engineering Products Plant. -- B. Lyubetskiy, director, Moscow Plant imeni Yablochkov (Moscow, Vechernyaya Moskva, 28 Mar 58)

[Comment; The Moscow Illumination Engineering Products Plant is either a brand new plant, or for some reason it has remained unmentioned by available published sources, including Moskva, Kratkaya Adresno-Spravochnaya Kniga (Moscow, Short Address and Information Book), 1956.]

Unidentified [Khar'kov] Plant

A plant with a mailing address at Post Office Box No 115 in Khar'kov is the producer of the Kharkiv electric razor, which retails at 190 rubles. This razor has a commutator motor and operates on 127 and 220 v ac or 110 v dc. It consumes a power of up to 16 w. (Moscow, Byulleten' Roznichnykh Tsen, No 18, Jun 58, p 27)

[Comment: No information on any Khar'kov plant producing miniature electric motors has been noted so far in the Soviet press.]

D. Plant Security Procedures

Every day, 20 or more persons come to the pass offices of the Moscow ATE-1 Plant and the Moscow Transformer Plant. These persons are workers from enterprises in Moscow and other cities. All of them come for important business and have little time to spare. However, to enter the plants, they have to wait in line for a long time at the pass office windows.

When a person arrives at these plants, he first must call up the shop or division he is to visit and request that a pass be written up for him. The shop or division fills out a special form, which is brought to the pass office by a messenger. Then the visitor is told that he can receive a pass. So he waits in line in front of the window as a new delaying procedure begins. The person on duty behind the window then fills out a pass, a check slip, and a check ticket for each visitor.

The situation is quite different at the Moscow Small Displacement Motor Vehicle Plant. The pass office window there is always free. One needs only to present his document, and he receives a pass in half a minute. There is nothing surprising about this, because the form filled out in the shop serves as a pass. This is such a simple thing, but think of all the time, work, and paper that is saved. Other Moscow enterprises should follow the example of the Small Displacement Motor Vehicle Plant. (Moscow, Moskovskaya Pravda, 2 Mar 58)

E. Consumer Goods Shortages

Many plants of the Leningradskiy Sovnarkhoz have stopped production of consumer goods. Consumer goods shops have been closed down as a result of specialization. Recently, 50 different products were taken out of production.

Consumer goods shops at enterprises of the Administration of the Electrical Engineering Industry of the sovnarkhoz were closed down very rapidly. For some reason, these plants have decided to stop production of such necessary goods as washing machines and vacuum cleaners.

The same is true of the enterprises of the Administration of the Instrument Building Industry. With the silent consent of the administration, the Lenteplopribor Plant recently ceased producing apparatus for Almaz safety razors, although the demand for such apparatus is great.

Formerly, plants of the Administration of the Shipbuilding Industry were renowned for the production of fine furniture. However, in 1957, almost all enterprises of the administration refused to produce furniture, despite a growing demand for it.

Why has the production of consumer goods become a secondary goal in the Leningradskiy Sovnarkhoz? In 1957, Mikhaylov, Deputy Chairman of the sovnarkhoz, said that steps would be taken to keep consumer goods shops operating. Even so, the production of consumer goods continues to diminish. (Leningradskaya Pravda, 29 Mar 58)

During the past 2-3 years, the variety of types of consumer goods at certain enterprises of the Lithuanian SSR has been narrowed down for no justifiable reason. For instance, the Vil'nyus Painting Apparatus Plant stopped producing manually operated orchard sprayers. The material used for coating the outside of the sprayers did not hold up under the action of strong chemicals. So, instead of making use of more durable materials, the plant decided to cut production of sprayers altogether. Because of the great demand for sprayers, trade organizations are firmly demanding that Gosplan Lithuanian SSR renew the production of such items. Gosplan has evidently forgotten that the Vil'nyus Painting Apparatus Plant was the only supplier of manually operated sprayers in the USSR.

In 1954 the Vil'nyus Electric Welding Equipment Plant [formerly Elektrotekhshirpotreb] began the production of washing machines. In 1955, trade organizations received more than 10,000 of these washing machines, which were of high quality and were in demand. However, after 1956, the plant ceased producing them. Now residents of the Lithuanian SSR are getting unsatisfactory washing machines from other republics.

In 1955, the Vil'nyus Avangardas Plant produced a much greater variety of electrical installation products than it does at present. In 1956, after trade organizations began to complain about the poor quality of these products, some of them were taken out of production. The 1958 plan of the Avangardas Plant, which was compiled by the Lithuanian Sovnarkhoz, sharply diminishes the variety of installation equipment produced. Whereas in 1957 the plant produced distribution panels, electric cord receptacles, and ceiling fixtures in 1958 it will produce none, although electrical installation products are in short supply. (Vil'nyus, Sovetskaya Litva, 18 Feb 58)

A. Yanovskiy, a reader of Leningradskaya Pravda, informed the editorial board of this paper that picture tubes for certain television sets were not available in department stores and television shops.

The editorial board referred this question to the State Committee for Radioelectronics of the Council of Ministers USSR. In answer, it received a promise that in 1958 the supply of picture tubes to television set owners would be improved. During the first quarter, trade organizations will receive 19,000 40 LK1B and 43 LK2B picture tubes, which are now in short supply. (Leningradskaya Pravda, 4 Mar 58)

Thousands of television sets are out of operation for months because their picture tubes break down.

The management of the L'vov Electric Bulb Plant, which produces types 40 1K1B and 43 1K2B picture tubes, have informed the editorial board of Trud that the plant is not to blame for the shortage of picture tubes, but that rather, it is the fault of the leaders of the radioelectronics industry.

Gol'dberg, deputy chairman of the Planning Division of the Committee for Radioelectronics of the Council of Ministers USSR, maintains that the L'vov Plant is to blame for the difficulties with type 40 1K1B picture tubes. For 10 months in 1957, the plant failed to fulfill its plan for either picture tube. He advised the representatives of Trud to confer with S. S. Kruglikov, an engineer of the Fifth Main Administration who had headed a commission that aided the plant in overcoming its lag.

According to Kruglikov, the L'vov plant had a very high reject rate when he arrived there, but through his commission's help, the plant began to fulfill its plan. He finished his statement thus:

"Even if the L'vov plant does excellent work, there will still not be enough picture tubes. Recently, I bought a Rubin television set, and I must admit I'm always afraid when I'm turning it on that the picture tube might burn out."

In 1957, there were not enough type 40 1K1B tubes. In 1958, there are not enough type 43 1K2B tubes, which are used in the new Rubin, Znamya, and Temp-3 television sets. The Leningrad Plant imeni Kozitskiy is even producing Znamya television sets without picture tubes. Picture tubes are now sold in department stores as "parts for televisions."

Trud representatives visited V. S. Smolin, Chief of Glavradiosbyt [Main Administration for Sales of the Radio Engineering Industry] of the Council of Ministers USSR, and his deputy, S. D. Savchenko. Both were of the conviction that the L'vov plant was to blame for the shortage of types 40 1K1B and 43 1K2B tubes. The plant was producing up to 20 percent rejects.

To rapidly overcome the difficulties with the picture tubes, the L'vov plant should stop producing rejects and increase production of type 40 1K1B tubes from 40,000 to 50,000 per year without lowering its plan for type 43 1K2B tubes.

According to the plan of the State Committee for Radioelectronics, which is confirmed by the figures of Gosplan USSR and Glavradiosbyt, the plant is supposed to produce 40,000 [40 1K1B] picture tubes in 1958; however, for reasons unknown, the plant maintains that it is supposed to produce only 30,000 40 1K1B tubes according to the plan.

The situation with 35 LK2B picture tubes is especially alarming. They are needed not only for the new Rekord, Zarya, Start, Belarus', Azerbaydzhan, and other television sets, but are used also for converting KVN-49 sets into large-screen sets. And more than 1.6 million KVN-49 sets are in operation in the USSR.

Three plants produce the 35 LK2B picture tubes. However, not one of these plants has a shop for processing glass. According to the plan, the Novosibirsk Plant was supposed to have produced 25,000 tubes during the first quarter of 1958; however, during the first 2 months, it produced only 14.

The construction of a new building is planned at the L'vov Electric Bulb Plant. Substantial funds have been allotted for this construction work. All efforts should be expended to put this building into operation as soon as possible.

The time has long been overdue for the creation of a high-capacity base for the production of picture tubes for all types of television sets produced by USSR industry. (Moscow, Trud, 22 Mar 58)

A resident of Akmolinsk bought a hearing aid for 395 rubles, but was unable to procure a battery for it. Consequently, he tried to return it and get his money back, but was unable to do so. (Alma-Ata, Kazakhstanskaya Pravda, 2 Mar 58)

[Comment: These shortages are interesting because the types of goods that are in short supply and the types of organizations responsible for their manufacture are of a key nature. The lame excuses given in the case of the television picture tubes are noteworthy because most likely the plant and committee personnel are not permitted to state that higher priority production is cutting into consumer goods production. Theoretically, industry under local economic administration should better fulfill the needs of workers for consumer goods than under a central administration. The trend, however, appears to be the opposite.]

F. Extra-Thin Metal Band

The instrument making and radio engineering industries, which produce complex high-speed electronic computers, high-class radio and television apparatus, sound recording equipment, and other products, have a great demand for extra-thin band from 0.02 to 0.002 mm thick made of magnetically soft and other special alloys. The production of such band entails considerable difficulties. A band 0.002 mm thick is one half or one third the thickness of cigarette paper. A kilometer of such band 3 mm in width weighs only 48 grams. One kilogram of band is more than 20 kilometers long.

For a number of years, TsNIIchermet (Central Scientific Research Institute of Ferrous Metallurgy) has been developing a method for rolling extra-thin band on laboratory rolling machines that it built itself. The Central Scientific Research Institute of Technology and Machine Building has developed and produced a 20-roller machine for rolling band from 0.02 to 0.005 mm in diameter and up to 100 mm in width.

The machine was put into operation in the laboratory of technology of the Institute of Precision Alloys of TsNIIchermet, and has now been given to an experimental plant for industrial production. (Minsk, Sovetskaya Belorussiya, 5 Mar 58)

G. Educational Requirements

A. F. Bordadyn, deputy chief of the Main Administration of Labor Reserves of the Council of Ministers USSR, says that the outstanding successes of USSR science and technology necessitate radical changes in educational plans. For example, at present, cybernetics is undergoing large-scale development. Electronic computers are in operation at institutes and at many enterprises. Only highly skilled, well-trained workers can operate these machines. Thus, it has been necessary to train personnel to service computers.

The same is true with regard to the development of radar. And there are many examples of this kind. (Moscow, Sovetskaya Rossiya, 17 Mar 58)

II. LOCAL PRODUCTION AND ORGANIZATION

In January and February 1958, enterprises of the Latvian SSR produced 82,500 radio receivers [Riga VEF Plant and Plant imeni Popov], a 7-percent rise over the equivalent 1957 period: and automatic telephone exchanges with a total call-handling capacity of 21,700 numbers [Riga VEF Plant], a rise of 8 percent over the equivalent 1957 period.

During the same months, Latvian enterprises also produced 1,085 sets of electrical equipment for lift trucks [Riga Avtoelektropribor Plant], a 17-percent rise over the equivalent 1957 period; 23 sets of electrical equipment for suburban electrified sections [Riga REZ Plant], a 15-percent rise over 1957; and 116 sets of train lighting equipment [Riga REZ Plant], a 19-percent rise over 1957. (Riga, Sovetskaya Latviya, 16 Mar 58)

In January and February 1958, enterprises of the Lithuanian SSR produced 245,000 electric meters [Vil'nyus Electric Meter Plant], a rise of 30 percent over the equivalent 1957 period; 1,572 welding transformers [Vil'nyus Electric Welding Equipment Plant], a rise of 29 percent over the equivalent 1957 period; 2,400 welding transformers [Vil'nyus Electric Welding Equipment Plant], a drop of 2 percent below the equivalent 1957 period; and 2.5 million rubles' worth of electrical installation equipment [Vil'nyus Avangardas Plant], a drop of 7 percent below the equivalent 1957 period. (Vil'nyus, Sovetskaya Litva, 16 Mar 58)

Instrument making enterprises of the Leningradskiy Sovnarkhoz (Council of National Economy) are developing automatic electronic chart-recording instruments, and new semiconductors. The enterprises of one of the administrations [probably the Administration of Shipbuilding] of the Leningradskiy Sovnarkhoz are mastering the production of 42 new types of products, including the Yunost' and Estafeta cameras, and a television sound projector. (Leningradskaya Pravda, 16 Mar 58)

In 1958, enterprises of the Administration of Radio Engineering Industry of the Leningradskiy Sovnarkhoz will begin production of silicon semiconductors and the Zarya and Znamya television sets.

Enterprises of the Administration of Instrument Building will master the production of 130 types of new instruments.

Enterprises of the Administration of Electrical Engineering Industry will begin production of the first 100,000-kw turbogenerator with a forced liquid and hydrogen cooling system, industrial ultrasonic installations, and a two-column 110-kw disconnecting switch. (Leningradskaya Pravda, 21 Mar 58)

Belyayev is chief of the Administration of Radio and Electrical Engineering Industry of the Gor'kovskiy Sovnarkhoz. (Moscow, Trud, 18 Feb 58)

Savin is the chief of the Administration of Instrument Building and Tool Industry of the Chelyabinskiy Sovnarkhoz. The Chelyabinsk Watch Plant is subordinate to this administration. (Moscow, Trud, 25 Feb 58)

By 1965, the output of the radio engineering industry of Moscow City Sovnarkhoz will be increased 50 percent. In 1960, it is planned to produce at least 3,000 color television sets. (Moscow, Sovetskaya Rossiya, 23 Feb 58)

N. Kirilyuk is chief specialist for the radio engineering industry of the State Scientific and Technical Committee of the Council of Ministers Belorussian SSR. A. Ammuel' is chief specialist for automation of the same committee. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 14 Mar 58)

The Alma-Ata Electrical Machinery Plant is suffering from stoppages because of a poor supply of materials. Since the beginning of 1958, the supply situation has deteriorated. In January, it received no more than one third of its needed materials and parts.

Shcheglov, commercial director of the plant, states that he does not know who the plant's suppliers are. For example, he does not know who is supposed to supply transformer steel, wire, and other items. The plant is supposed to receive more than 7,000 type-designations of parts and materials, and is getting no more than 2,000.

The plant had been obtaining bronze strip from a plant in Balkhash for a long time, but now, its ties with this plant have been broken off. Telephone conversations and correspondence were carried on for more than 2 months over the lack of bronze band. Onika, chairman of the Karagandinskiy Sovnarkhoz, promised to take "timely measures" to see that the band was shipped: however, the first consignment did not reach the Alma-Ata plant until 10 February [instead of January].

The supply of parts from enterprises in Ul'yanovskiy, Ufimskiy, Moscow City, Moscow Oblast, Irkutskiy, Leningradskiy, and other sovnarkhozes is very poor.

Gosplan Kazakh SSR is adding to the confusion. Instead of planning a supply of 40,000 meters of ShTRO wire for the Alma-Ata Electrical Engineering Plant, it planned merely for 2,300 meters. It neglected the supply of PRP and RPSh wire and other materials. This error was corrected at the end of January. However, the plant has yet to receive the materials for the period of the misunderstanding. (Alma-Ata, Kazakhstanskaya Pravda, 19 Feb 58)

The Central Design Bureau of Elektroprivod [State All-Union Electric Drive Trust] needs the following personnel for steady employment:

Experienced electromechanical designers

Designers for electronic apparatus

Engineers and design technicians for electric machines and apparatus

Design engineers and technologists for general machine building

Process engineers for electric machines and apparatus

Engineers specializing in computer technology

Engineers specializing in automatics, industrial electronics, and electronic circuits

Technical editors

Electroacousticians

Radio operating engineers

Apply at Elektrozavodskaya ulitsa 19, Moscow; telephone Ye 3-09-82, Personnel Division. (Moscow, Moskovskaya Pravda, 22 Feb 58)

III. ELECTRONIC EQUIPMENT

A. General

The USSR has attained unequaled successes in training radio specialists; in creating an extensive network of radio engineering institutes, design bureaus, and plants; and in equipping them with first-class materiel. Electronics has been developed by the efforts of Soviet specialists and workers on the basis of the successes of radio engineering.

The current development of electronics encompasses such fields of technical sciences as radio communications and broadcasting, television, radar, radioastronomy, electronic computers, and high-power accelerators for atomic physics. All of these areas of electronics have immeasurably expanded the latitudes of human capabilities.

In mastering atomic energy, scientists have learned to control it with the aid of electronics. The study of induced radioactivity began with the use of accelerators, which are electronic instruments developed only after scientists and engineers had mastered the methods of controlling the movements of very small charged particles. In a short time, accelerators were transformed from laboratory instruments to huge industrial installations, inducing several billions of electron volts into particles of matter. Formerly, such energy could be observed only in cosmic particles.

One of the most important achievements of USSR electronics is the development of a 10-billion-electron-volt accelerator, the most powerful in the world. It serves for the peaceful purposes of mastering atomic energy in the Joint Institute of Nuclear Studies.

Another great achievement of USSR electronics is the creation of simulating machines and high-speed electronic computers. Such electronic machines are being introduced for automating industrial processes.

The very development of electronics is firmly tied to the development of new equipment for detecting weak radio and light signals. Television, which has so firmly imbedded itself into our life, was the result of successes in the field of electronics. Television is being used more and more in industry. It is of especially great service in the large-scale utilization of atomic energy. It makes it possible to protect men from harmful radiation and to control nuclear installations by remote means.

At present, Soviet scientists are developing a vast arsenal of electronic equipment, which will enable the USSR to supply its industry, transport, and communications with the most modern instruments. -- V. Tikhomirov, Corresponding Member of the Academy of Sciences USSR (Moscow, Moskovskaya Pravda, 19 Feb 58)

On 6 May 1958, V.D. Kalmykov, chairman of the State Committee for Radioelectronics of the Council of Ministers, gave a speech about the successes of the USSR radio industry, at an evening celebration in the Central Lecture Hall of the All-Union Society for the Dissemination of Political and Scientific Knowledge.

A. I. Shokin, deputy chairman of the State Committee for Radioelectronics of the Council of Ministers USSR, spoke on radioelectronics and its application in various branches of the national economy, at a celebration on 7 May 1958 in the Palace of Sports of the Central Stadium imeni Lenin in Moscow.

From 12 to 17 May, a scientific session dedicated to Radio Day was held in Moscow. A large number of radio specialists, including some from foreign countries, took part in this session. About 300 reports dealing with various questions concerning information theory, semiconductors, television, radiobroadcasting and acoustics, transmitting and receiving units, antennas, wire communications, radio measurements, and other subjects were read at the session. (Moscow, Vestnik Svyazi, Jun 58, p 18)

B. Radio and Television Sets

In 1958, the Baku Radio Plant will produce about 10,000 more Araz radio-phonographs than the number of Baku radio receivers it produced in 1954. In 1958, it is to begin production of the new Azerbaydzhan radio-phonograph. (Baku, Bakinskiy Rabochiy, 16 Feb 58)

The Suliko miniature radio (1) was designed by a group of Tbilisi engineers and technicians. This matchbox-size receiver is fed by a miniature battery and receives up to 12 long-wave and medium-wave stations. It utilizes a built-in antenna.

The small size of this radio has been rendered possible with the application of semiconductors. Its production will be undertaken at the [Tbilisi?] Radiotekhnika Plant, which until now has usually produced loud-speakers. (Moscow, Ogonek, No 27, Jun 58, p 15)

(1) Photo available in source, p 15, center

During the past 2 years, television units have come into use in many areas of science and industry, where they can be used for observing certain processes from a distance. However, these units have not always been satisfactory to the users, since sometimes it is necessary to transmit not just images, but various colors, such as the color of flames, mixed paints, and heated metal.

In view of these needs, the Leningrad Television Institute began developing a color television unit in 1957. The first model is being demonstrated in the exhibition hall of the Club for Scientific and Technical Propaganda. Similar units, although built only a few months ago, are already in use. For instance, one is being used in the First Medical Institute for transmitting the progress of surgical operations. (Leningradskaya Pravda, 28 Feb 58)

The television laboratory and television shop of the Minsk Radio Plant are the newest facilities at the plant, but the first models of Belarus' television sets produced there several years ago are already considered old-fashioned.

The currently produced Belarus'-3 table-model radio-television-phonograph is being modernized and will be called the B3M (Belarus'-3, modernized). It will have 12 channels instead of five.

The new Belarus'-4 under development at the laboratory will also be a table-model radio-television-phonograph. It will have long-wave, medium-wave, short-wave, and ultrashort-wave bands, an automatic volume control, and an automatic line-frequency tuner. (Minsk, Sovetskaya Belorussiya, 12 Feb 58)

According to Kanayev, chief engineer of Gosradiotrest, an excessively large number of new-type KVN-49-4 television receivers have to be repaired during their guarantee period. This is also true of other television sets, such as the Rubin, which is produced by a plant subordinate to the Moscow [City] Sovnarkhoz. In 1957 over 70 percent of the television sets of this type had to undergo repair before their guarantee period was up. (Moscow, Radio, Jun 58, p 10)

C. Components and Accessories

1. Tubes

At present, new television centers are being built in many cities. Leningrad enterprises produce equipment for these centers, in particular, television transmission [cathode-ray] tubes. The type LI-7 is designed for the transmission of motion-picture films. The more portable and sensitive LI-17 is designed for transmission away from the studio, in stadiums and in open areas. Other tubes are also produced in Leningrad. Recently, a number of improvements have been made in [television transmission] tubes. In 1958, the mass production of these tubes, which carry a Leningrad trademark, was begun for the first time. (Leningradskaya Pravda, 14 Mar 58)

A new type of miniature radio tube has been put into production at the medium oscillator tube shop of the Leningrad Svetlana Plant. These tubes contain up to 40 parts, the smallest of which is 62 microns in diameter.

The brigade assembling these tubes utilizes microscopes for its work. It is headed by Galina Semenovna Yemel'yantseva, deputy to the Council of Nationalities of the Supreme Soviet USSR. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 19 Mar 58)

In 1958, the Moscow Electric Bulb Plant will increase its production of subminiature radio tubes. The installation of a new unit for aging subminiature radio tubes has been completed in the control and measuring equipment shop. It will be possible to age 1,600 tubes simultaneously on this unit. By the end of the month, two additional aging units of this kind will be installed. (Kishinev, Sovetskaya Moldaviya, 2 Mar 58)

2. Light Bulbs

Formerly, the Yerevan Electric Bulb Plant had to procure bulbs and glass for electric bulbs from Moscow, Riga, and L'vov. In 1957, it paid out more than 2 million rubles in transportation costs. One of the sovnarkhoz's first tasks was to provide the means for the plant to produce its own bulbs. After the second quarter of 1958, a glass shop will go into operation, and the plant will be freed of the necessity of procuring glass elsewhere. (Yerevan, Kommunist, 12 Feb 58)

The Moscow Electric Bulb Plant produces new high-pressure mercury lamps, which are used for lighting large areas.

The Moscow Elektrosvet Plant imeni P. N. Yablochkov produces nonglare light fixtures and fixtures for damp and dusty premises, for chemical plants, and for tunnels. (Leningradskaya Pravda, 25 Mar 58)

New possibilities have been opened up for the design of motion-picture projection apparatus as a result of the latest achievements of USSR vacuum tube research. Of particular significance are the development of superhigh-pressure xenon lamps by request of NIKFI [Scientific Research Motion-Picture Film Institute] and the organization of their production at the Moscow Electric Bulb Plant.

The SVDSh xenon lamps have illumination characteristics equal to those of high-intensity arc lamps, and maintain the operational advantages of incandescent lamps. (Moscow, Kinomekhanik, Jun 58, p 31)

3. Semiconductors

Even before World War II, Soviet physicists showed that with the help of semiconductors, it was possible to convert heat into electric energy directly, without the use of machines, at a high efficiency.

USSR industry is already producing thermoelectric generators for supplying power to kolkhoz radio receivers. Before long, a new generator will replace heavy storage batteries.

At present, semiconductor (crystal) amplifiers play an important part in radio engineering. The replacement of vacuum tubes by semiconductors makes it possible to develop miniature matchbox-size radio receivers.

A television set completely based on semiconductors has been in operation for several years. This television set uses 75 kopecks' worth of electric power per month for its daily operation.

At present, it is possible to organize mobile radio-telephone communications in the vhf spectrum. If such apparatus is built around crystal amplifiers, it will occupy little space and weigh very little.

The most fascinating prospects are offered by the initial introduction of semiconductors into industry. With the help of semiconductors, such fundamental problems as the direct transformation of heat and solar energy into electric power can be solved.

At present many laboratories of scientific research institutes are working on the development of new semiconductors and new equipment based on them. This field is one of the newest branches of science, just about as old as nuclear studies. Its rate of development can be judged as being second only to that of nuclear physics. (Moscow, Kazakhstanskaya Pravda, 13 Feb 58)

4. Waveguide

The Scientific Research Institute of the Cable Industry, jointly with the Institute of Radio Engineering and Electronics, Academy of Sciences USSR, has developed flexible spiral waveguides with inside diameters of 12 mm and attenuation of .6-.8 decibels per meter for 8-mm waves. (Moscow, Radiotekhnika i Elektronika, Jun 58, p 741)

5. Antenna Kit

Television antenna kit No 1 consists of an RK-1 10-meter lead-in cable, a one-piece antenna with insulators, a 2.5-meter antenna ground wire, a 2-meter length of braided copper wire, and a 5-meter length of extension wire. The retail price of the kit is 47 rubles, 50 kopecks.

Television antenna kit No 2 consists of the same items as kit No 1, except that it has a 20-meter length of RK-1 lead-in cable. Its retail price is 82 rubles. (Moscow, Byulleten' Roznichnykh Tsen, No 18, Jun 58, p 16)

6. Loud-Speakers

The Institute of Radiobroadcast Reception and Acoustics has developed column-type loud-speaker systems for large areas. They are made in two variants: with metal cabinets for outdoor installation and with wooden cabinets for indoor installation.

The speakers have high electroacoustic characteristics. Their frequency range is from 100-120 to 8,000 cycles with frequency characteristics distortion of 15 decibels. The average sound pressure developed by the speaker in the 200-2,000 cycle band is at least 2.5 bars. (Moscow, Vestnik Svyazi, Jun 58, inside front cover)

D. Communications Equipment

Gosplan USSR and the gosplans of union republics do not give communications organs sufficient help in placing orders for the production of new communications equipment at industrial enterprises. Instead of diligently reviewing these questions and including these orders in production plans of the proper sovnarkhozes and plants, they limit themselves to asking a sovnarkhoz to weigh the possibility of producing new communications equipment. This often leads to long and fruitless correspondence.

This is why the [Leningrad] Krasnaya Zarya Plant is delaying the planning and production of rural relay-unit telephone stations with capacities of 10-40 numbers. The Latvian Sovnarkhoz (Council of National Economy) and the Riga VEF Plant are trying to avoid organizing the production of SVR-ADU apparatus for the remote control of wired-radio units, which was developed at the plant.

For 2 years already, the Riga Diesel Plant has failed to begin the development of automatically controlled diesels for power supply bases. One of the plants of the Vladimirskiy Sovnarkhoz has delayed the production of an experimental model of a KRU-40 kolkhoz wired-radio unit utilizing semiconductors, and has refused to begin its series production.

Steps should be taken to bring about the complete fulfillment of orders from the Ministry of Communications by the Leningradskiy, Latvian, Vladimirskiy, and other sovnarkhozes and by leading enterprises of the radio engineering industry. These sovnarkhozes and enterprises are obliged to satisfy fully the needs of communications organs for modern automatic and remote-controlled apparatus for telephone and radio installations in rural areas, and to develop new communications apparatus and master its series production in a short period of time. (Moscow, Vestnik Svyazi, Jun 58, p 20)

The development of local telephone communications in rural areas and internal communications in enterprises and kolkhozes should be carried on only by installing automatic telephone equipment. For this reason, the Riga VEF Plant sould step up its development of low-capacity automatic crossbar equipment, and the Leningrad Krasnaya Zarya Plant should expand its production of relay stations.

The VEF Plant should also accelerate its preparations for the production of telegraph relay apparatus with code switching, so that the largest USSR telegraph centers can be equipped with them in as short a time as possible. (Moscow, Vestnik Svyazi, Jun 58, pp 1-2)

E. Plant Identification

The personnel office of the Tallin Punane RET Plant is located at ulitsa Anvel'ta, 9/11, Tallin. -- Advertisement (Tallin, Sovetskaya Estoniya, 16 Mar 58)

Vasil'yev is director of Leningrad Radio Products Plant No 3 (zavod No 3 radioizdeliy). (Moscow, Trud, 29 Mar 58)

Certain parts are made by die casting in Shop No 7 of the Leningrad Plant imeni Kozitskiy. (Leningradskaya Pravda, 30 Mar 58)

IV. PRECISION EQUIPMENT

A. Automation

It is a general opinion in the USSR that the results of present-day automation are not great enough and do not reflect the country's true capabilities. This lag behind capabilities has two basic causes: The results of over-all automation and mechanization have not yet affected industry as a whole, but only certain of its best enterprises. Even at these certain best enterprises, mechanization and automation are on a partial, rather than an over-all level.

Experience in the development of radar equipment, rockets, jet aircraft, and atomic energy have shown that when proper attention is given, and when forces are concentrated and mobilized properly and supplied with the material means for technical projects, we have always brought the most difficult of these projects to successful completion.

The most important practical problem at present is the automation of existing enterprises. Automation of existing equipment and processes is often hampered by poor industrial processes and equipment, which had formerly been planned without consideration for automation. All new equipment, shops, and enterprises must be planned for the maximum utilization of automation capacity in the future.

All tasks in the field of automation must be based on a single plan reflecting a single technical policy.

As before, the insufficient quantity of automation equipment and instruments is a drawback in the development of automation. The production of equipment for mechanizing loading and unloading operations is most unfavorable.

There are still insufficient specialists in automatic equipment, telemechanics equipment, and instrument operation. Higher schools in the USSR still fail to give consideration to the requirements connected with the rapid development of instrument making and the production of automation equipment. Actually, no one is seriously occupied with the problem of training such personnel. This is why at certain enterprises, instruments and automation equipment are operated by insufficiently skilled personnel, and are often out of operation. The plans of higher technical educational institutions and tekhnikums should be revised to train more specialists in automation and related fields.

A great drawback in the field of automation is the definite divorcement of science, especially economic science, from the urgent practical problems of automation. USSR economists are still disputing widely the criteria of economic effectiveness of automation, but have yet to develop theories of the profitability and the economic effectiveness of automation in the socialist order.

The high level of production in the US and the industrial successes of West Germany have been determined by the large-scale development of over-all automation in these countries.

A significant role in the organization of industrial automation should be played by the recently founded Council of Automation of Gosplan USSR. This council is to decide and emphasize the most efficient means for carrying out industrial automation in the USSR. (Moscow, Priborostroyeniye, Jun 58, pp 1-3)

In addition to a rapid increase in the output of instruments and automation equipment in the USSR, qualitative changes must also be made in developing this branch of industry. First and foremost is the necessity for a single technical policy, which will play a major role in determining technological advances in many branches of the national economy.

A single technical policy will provide for the development of interchangeable components for automation systems.

Automation of a number of production processes, particularly those involving direct and continuous determination of the state and composition of substances, is hampered by the insufficient variety of instruments produced, which results from poor coordination in the development of instruments and automation equipment.

There is a lack of instruments for producing and processing agricultural products. There are no continuous automatic analyzers of the composition of liquids and gases, no precision pH meters for temperatures of 100 degrees centigrade or over in apparatus which is under pressure, no concentration meters for weak acids (for example: 5-15-percent solution of hydrochloric acid), no instruments for measuring the concentrations of various substances (iron, calcium, cobalt, arsenic, ammonia, etc.) in solution and in solid precipitates, no hygrometers for determining the moisture content of various raw materials (doughy masses and friable substances), no automatic regulators of the density of water solutions and alkalis, no instruments for measuring the clarity of solutions, no dust gauges, no smoke gauges, or certain other instruments. This situation impedes the automation of such important processes as the production of synthetic rubber, synthetic spirits, plastics, and other items. The absence of special transmitters hampers the automation of

flotation processes at ore-dressing factories; the production of lead, zinc, aluminum, and other metals; the processes of extracting pure oxides or hydroxides of rare metals in nonferrous metallurgy; and other processes.

Much attention should be devoted to developing the production of groups of instruments for measuring the level, quantity, and consumption of friable and lump substances.

Recently, SKTB BFA (Independent Design and Technological Bureau of Biophysical Apparatus) developed an entire series of level gauges for liquid and friable substances utilizing the substance itself as a capacitor plate. The electrical capacitance of the latter is measured in a compensation circuit.

The experimental model of the type MARS machine for the digital registration of industrial parameters, which was developed by the SKTB BFA, is of particular interest. It was created both for the sake of unifying transmitters and for the sake of its own intrinsic development.

(Source gives additional information on automation problems.) (Moscow, Priborostroyeniye, May 58, pp 3-4)

The lack of sufficient quantities of new mechanization equipment is a considerable impediment to over-all mechanization and automation. The delay in the output of mechanization equipment for the most important branches of the national economy is chiefly the fault of the machine building industry.

Until now, automation has encompassed only a portion of industrial processes. For the time being, automation is limited to the regulation of certain parameters having no connection with one another and has reached only a small number of enterprises and branches of industry.

(Source gives additional details on automation problems.) (Moscow, Priborostroyeniye, May 58, pp 1-2)

Despite the many accomplishments of the USSR instrument making industry, difficulties often arise with regard to problems of automation because of the insufficient production of instruments and apparatus. This is obviously the fault of the instrument making industry [and not of science]. New well-recommended instruments such as the automatic polarograph and pH-meter developed by the Central Laboratory of Automatics, and optical-acoustical gas analyzers are being produced in much too small quantities. Instruments for mass spectrography and roentgen spectroscopy, ultrasonic flaw detectors, and other instruments have not yet been put into series production. (Moscow, Zavodskaya Laboratoriya, No 5, 1958, p 518)

The Central Design Bureau of Refrigeration Machine Building has worked out a gradation system for the automatic equipment of refrigerators, and has drawn up a plan for its introduction in the years to come. At present, the types RD-10 and RD-11 pressure relays, the type RR consumption relay, the TRM-2M small-size thermal regulating valve, and the type ADT intake choke have been developed and are being put into production.

The types RD-10 and RD-11 pressure relays are single-bellows types designed for checking the Freon pressure for intake and delivery. A series-produced microswitch is used as a contact group. The relays are designed for transport installations and have dustproof and spatterproof housings.

The pressure relays have been designed by the Scientific Research Institute of Thermal Engineering Instruments and have been submitted for production at the [Tartu] Termoavtomat Plant.

The type RR relay is designed for checking coolant consumption, and is a unit in which a type DRD-1 differential pressure relay, a chamber diaphragm, and valves are used. The diaphragm is selected to suit the coolant consumption. The relay is designated according to the rated permeability of the diaphragm (for example: in the RR-4, rated permeability is equal to 40 mm).

The DRD-1 instrument can be used separately as a differential pressure relay.

The RR was developed by the [Moscow?] Manometer Plant, and has been submitted for production.

The small-size TRV-2M membrane-type thermal regulating valve was developed to replace the TRV-2 bellows valve for 2,000 kilocalories per hour. It is designed for the automatic regulation of the feed of liquid Freon-12 to the vaporizer, depending on the heat of the vapors emanating therefrom. The TRV-2M has no balance line. It is considerably smaller in size and lower in weight than currently produced valves.

The type ADT automatic intake choke is designed for the automatic regulation of a compressor's output depending on the coolant temperature. The ADT is made with an independent transmitter or as one single unit. These types of regulators are not undergoing stand testing.

The types TRV-2M valves and ADT regulators were developed by the design bureau at the [Moscow] Respirator Plant. (Moscow, Kholodil'naya Promyshlennost', No 2, Mar-Apr 58, p 70)

The Problem Laboratory for the Over-All Mechanization and Automation of Hoist and Transport Machines of the Moscow Higher Technical School imeni Bauman has successfully tested a radio-controlled electrical overhead traveling crane. Such a unit has hitherto never been built either in the USSR or abroad.

The remote-control system consists of a receiver, a transmitter, and a control panel. The transmitter is located in a case behind the operator, who holds the control panel in his hand. (Moscow, Moskovskaya Pravda, 18 Feb 58)

TsNIIKA (Central Scientific Research Institute of Over-All Automation) needs engineers and design technicians in its Design Division for work on designing instruments and automatic control devices.

Applications should be made at Ol'khovskaya ulitsa, 25, Moscow. -- Advertisement (Moscow, Vechernyaya Moskva, 17 Mar 58)

B. Instruments

1. Electrical

The 1957 production of the Vil'nyus Electric Meter Plant was 36 percent higher than in 1956. In 1957, the plant had a gross production value of 17,600 rubles per square meter of production space, as compared with 12,900 rubles in 1956. In 1957, it produced 120,000 above-plan electric meters, and had an above-plan profit of 5 million rubles.

The plant is expanding constantly. Recently, a new production building was put into operation. -- M. Abramson, Deputy Chief, Planning and Production Division, Vil'nyus Electric Meter Plant (Vil'nyus, Sovetskaya Litva, 2 Mar 58)

In a valley between Tayninka and Mytishchi, not far from Moscow, is a plant that does not appear to be large. This plant [usually known as the Mytishchi Electric Meter Plant] is the leading USSR producer of single-phase household electric meters. It also designs new meters for other enterprises to produce. Each minute, four electric meters come off its conveyer.

The plant has begun the production of the new SO-2 meter. The meter coil used in this model is wound on a plastic shell. The core of the meter has copper windings on top of impregnated batiste. The impregnated batiste costs 17 rubles per linear meter. One linear meter of batiste suffices for 50 electric meters. (Moscow, Leninskoye Znamya, 19 Mar 58)

The Kiev Tochelektropribor Plant has begun the production of new types of ammeters and voltmeters based on semiconductor rectifiers. The plant is aided in achieving the desired high accuracy of the instruments by a research group of the Laboratory for Electrical and Magnetic Measurements of the Institute of Electrical Engineering, Academy of Sciences Ukrainian SSR. The group, which is headed by the institute's director, A. Nesterenko, a corresponding member of the Academy of Sciences Ukrainian SSR, was organized at the plant by request of the [Kiyevskiy] Sovnarkhoz (Council of National Economy). (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 28 Mar 58)

The Leningrad [Electrical] Machinery Plant has begun the production of dc electric meters, which will be used in electric locomotives and in the copper and aluminum industries. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 28 Mar 58)

The Leningrad Vibrator Plant is the producer of the type Yul6 lux meter. (Moscow, Knizhnaya Letopis', No 15, 1958, p 37)

The Leningrad Vibrator Plant is the producer of the types D164 and D174 wattmeters. (Moscow, Knizhnaya Letopis', No 25, 1958, p 30)

The Yerevan Elektrotochpribor Plant is the producer of the UVN-80 instrument [not further identified] and of the M-24 microammeter.

The plant has finished the laboratory testing of a type E-91 instrument [for further identified]. Formerly, this instrument was shipped from Vitebsk to the Armelektro Plant. Now the Elektrotochpribor Plant will be producing it. (Yerevan, Kommunist, 2 Mar 58)

The Chair of Electrical Engineering and Electrical Equipment of MATI (Moscow Aircraft Technological Institute) has developed highly precise voltage stabilizers, which deviate only a few hundredths of one percent. They are being installed on airplanes. They are also operating at the Moscow Institute of Precision Time and are used for testing radio equipment. These stabilizers are as good as the best foreign-made types.

Yu. N. Pryadilov headed the work on developing these voltage stabilizers. (Moscow, Vechernyaya Moskva, 5 Mar 58)

2. Other Instruments

The Moscow Fizpribor Plant has finished assembling a new high-speed multichannel pulse-amplitude analyzer, the type BMA-50. This instrument will help physicists to solve questions connected with nuclear research. It will be exhibited at the Brussels Fair.

The new instrument, which was built in the experimental shop, has more than 2,000 vacuum tubes and 50,000 other parts. (Moscow, Vechernyaya Moskva, 28 Mar 58)

Fine wire with enamel insulation is checked for quality with an instrument having a mercury cup. The Leningrad Branch of the Scientific Research Institute of the Cable Industry has begun checking fine wire with a wet contact connected to an electronic meter. This makes it possible to standardize checking operations and to conduct them on a constant-flow basis.

The electronic meters have been assigned for production at the Leningrad Electrical Machinery Plant. This plant has also mastered the series production of defectoscopes for checking the insulation of enameled wire during the enameling process. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 21 Feb 58)

The Moscow Energopribor Plant has finished assembling a new instrument, the REK-391, which is used for the continuous determination and registration of the quantity of oxygen in water used for feeding high-power boilers. This instrument will be shipped to India. (Moscow, Vechernyaya Moskva, 18 Feb 58)

The Barnaul Geophysical Apparatus Plant produces semiautomatic core-sampling stations for petroleum wells. In 1957, it began the production of the new type ASG-26 station, which is equipped with highly sensitive and precise instruments. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 5 Mar 58)

The Riga Etalon Plant is the producer of the type DR-0.5 dynamometer (Riga, Sovetskaya Latviya, 5 Mar 58)

The production of machines for testing metal fatigue during rotary bending has been developed satisfactorily in the USSR. The now-defunct Glavtochmash [Main Administration of Precision Machine Building] modernized its series of machines for standard samples, utilizing a speed of 6,000 rpm. The same kinds of machines, but heated with Silit furnaces, utilize even higher speeds.

Many metals laboratories occupied with the study and utilization of heat-resistant alloys, are well equipped with machines for the hot creep-testing of metals. In addition to the Central Boiler and Turbine Institute and the Central Scientific Research Institute of Technology and Machine Building, the pioneers in this sort of work, production of the creep-testing machines was also undertaken by a number of plants of the former Glavtochmash. Soon production will begin of machines with vacuum furnaces and special heaters for temperatures far in excess of those currently used.

Despite the urgent need for tests under extremely slow changes in the load cycle, such tests are being neglected because of a lack of proper equipment. It is true, nevertheless, that recently certain universal static-action machines made by the Armavir Testing Machine Plant, and model IPS presses have begun to be equipped with pressure stabilizers and simple attachments for providing slowly occurring pulses at set intervals.

Only one USSR plant, the Armavir Testing Machine Plant, devotes its entire effort to the production of testing machines. Other enterprises, including the Moscow Experimental [Testing Machine] plant, are secondary in nature. Often, they do not have the necessary production spaces, machine tools, personnel, or funds for metal.

The Armavir plant is not yet working at full capacity and is very much dependent on its suppliers for castings, forgings, and auxiliary mechanisms. Its production program is flooded with a multitude of special orders. As a result, it is highly difficult to acquire machines included in the products-list, to say nothing of specialized machines.

USSR testing machines are heavier than foreign types and are inferior to them in make-up, automatic features, service life, and external appearance. Consequently, it is necessary to give serious attention to the development of experimental design work and to the theoretical analysis and experimental study of testing machines. At one time, these tasks were assigned to NIIvesprom [Scientific Research Institute of Scales and Testing Machines] and to the Special Design Bureau of Testing Machines of Glavtochmash. Unfortunately, their work was done on too low a level, although they did contribute to the development of USSR testing machines.

In recent years, three conferences on testing machines have taken place in Moscow. However, neither the resolutions of the conferences nor the recommendation on this problem made by the Committee of Durability of VNITOMashinostroyeniya [All-Union Scientific Engineering and Technical Society of Machine Building?] have produced any perceptible results. The present reorganization of industry into economic

regions affords favorable prospects for solving the problems of the production of testing machines. In the meantime, unsolved problems do exist. The plan for developing the Armavir plant for the immediate future has not been worked out. The [recent] transfer of NIIvesprom and the Special Design Bureau for Testing Machines to the Moscow City Sovnarkhoz cannot be considered just. The direct problems of the capital, its economy, and its industry, can sidetrack the problem of developing new testing machines on a broad over-all scale.

(Source contains additional information on the use of testing machines and solutions to research and production problems.) (Moscow, Zavodskaya Laboratoriya, No 1, 1958, pp 4-8)

The Leningrad Gosmetr Plant has produced analytic microscales for weighing gold, silver, platinum, and other costly metals. It weighs with a precision of a hundredth of a milligram. (Moscow, Izvestiya, 15 Mar 58)

The [Leningrad] Gosmetr Plant has produced an experimental model of a new type of analytical scales. This type is designed for weighing costly metals and jewels. It can also be used for determining the amount of gold in ores.

In contrast with earlier-produced types, the new scales have a special unit for stopping the rocking of the balance beam. They can determine weight with an accuracy of up to hundredths of a gram. (Leningradskaya Pravda, 2 Mar 58)

In 1950, the first [USSR] mechanical cardiograph was developed by the Laboratory of Optical Instruments of LITMO (Leningrad Institute of Precision Mechanics and Optics) under the guidance of Prof S. T. Tsukerman and according to the system drawn up by Prof N. N. Savitskiy. The instrument proved highly satisfactory in testing, and was approved by the Scientific Medical Council of the Ministry of Health USSR. It was exhibited at the All-Union Industrial Exposition, and several copies of it were sent from the institute to the largest medical institutions in the USSR.

The demand for these cardiographs grew continuously. In the meantime they were continuously improved by the institute, and small and medium-size versions were developed. By right, they should have been put into production as soon as possible. The requests for these cardiographs were passed from the institute to the Ministry of Health and then to the Leningradskiy Sovnarkhoz. The Leningrad Krasnogvardeyets Plant took blueprints of these instruments but never produced any.

So as time passes, more and more requests are sent to the Institute of Precision Mechanics and Optics, and no one ventures to produce this badly needed instrument. A single model of the latest mechanical cardiograph graces the Industrial Exposition in Leningrad, but does no one any good. (Leningradskaya Pravda, 30 Mar 58)

C. Computers

The Konstantinovka Glass Plant imeni Oktyabrskaya Revolyutsiya in Stalinskaya Oblast sent a complaint to the Kursk Computing Machine Plant that the three Feliks adding machines it had purchased recently were not in good working order. Yermolayev, acting director of the Kursk plant, answered this complaint, stating that the Konstantinovka plant need only send the machines back to Kursk and they would be either repaired or replaced.

The Konstantinovka plant then sent the machines to Kursk. After 2 months of waiting, it began to send inquiries about the machines, but received no answer. Later it referred the case to the Kursk city prosecutor's office, where it was disclosed that management of the Kursk plant allegedly had never received the machines.

A reader, V. M. Pupik, however, states that the adding machines arrived at the Kursk plant 4 months ago. What kind of chaos reigns in the administrative tangle of this plant that three adding machines could get lost without a trace? (Moscow, Izvestiya, 12 Feb 58)

The Statistical Administration of the Lithuanian SSR recently received 13 computing machines of a new type, which were produced at plants in Moscow and Penza. This is the first time such machines have been sent to the Lithuanian SSR. Some of them have about 110,000 components. Two tabulators and two card punch machines will be operated by only one person. (Moscow, Sovetskaya Litva, 18 Feb 58)

The Vil'nyus Computing Machine Plant recently began assembling cash registers. Soon these cash registers will be appearing in department stores. (Vil'nyus, Sovetskaya Litva, 27 Feb 58)

Scientific workers of the Dnepropetrovsk Mining Institute have developed a machine for calculating ventilation networks and for controlling the ventilation of mines. The new computing machine utilizes germanium triodes. It carries out computations 20-40 times as fast as can be done by conventional methods. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Feb 58)

The Kiev universal electronic computer has been developed in the Institute of Mathematics of the Academy of Sciences Ukrainian SSR. It was developed by a group of scientific workers of the institute headed by Academician B. Gnedenko, Prof V. Glushkov, and Candidate of Technical Sciences L. Dashevskiy. The computer is designed to carry out a wide range of complex mathematical problems, and can also be used for controlling industrial processes at metallurgical and chemical enterprises and at petroleum refineries. It is suitable for other purposes too.

The Kiev is capable of carrying out at least 7,000 operations per second. All of its units, such as the arithmetic and storage units, work independently on different frequencies. The autonomous units and the improved electrical circuits, as well as the utilization of semiconductors and other new components, have heightened the reliability of the operation of the entire electronic computer system. The Kiev requires an installation and service area of 40 square meters. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 14 Mar 58)

A laboratory of Economic Research and Machine Computations has been organized under the Chair of Computations and Statistics of the Leningrad Agricultural Institute.

The new laboratory has been equipped with complex computers, which will be run by two economists, two operators, and a mechanic. Future agronomists, economists, and other specialists trained by the institute will become acquainted with machine computations applied to agricultural production.

The laboratory will also handle all computations connected with the research activities of the institute's chairs. In addition, it is expected to carry out computations for kolkhozes and sovkhozes in Leningradskaya Oblast. (Leningradskaya Pravda, 23 Mar 58)

D. Optical Equipment

The Leningrad Experimental Optical Machinery Plant of the Russkiye Samotsvety Trust has produced its first 2,500 small student-type telescopes. This type of telescope is about 20 cm long and uses a system of mirrors and meniscus lenses, as recommended by D. D. Maksutov, Corresponding Member of the Academy of Sciences USSR. (Leningradskaya Pravda, 19 Mar 58)

Often, the necessity arises for photographing an object covering an extended plane from a distance of several hundred meters, or even 2 or 3 kilometers. For this purpose, a meniscus telescopic lens based on the system devised by D. D. Maksutov has been developed.

The Leningrad Experimental Optical Machinery Plant of the Russkiye Samotsvety Trust is beginning the series production of this new MTOM-500 telescopic lens, which is designed for use in reflex cameras. (Leningradskaya Pravda, 30 Mar 58)

K. N. Shistovskiy, Candidate of Physical and Mathematical Sciences, has designed a full-turn panoramic camera, which will take a circular picture of the entire 360 degrees of horizon "in the desired scale" within 1-2 seconds. This camera, which was built in the experimental workshops of the Moscow Planetarium, is 155 mm in diameter and 50 mm in height and weighs about 800 grams. A watch mechanism in the camera powers the 360-degree turn. The camera uses ordinary motion-picture film and makes a picture [negative] which is 50 cm long. (Moscow, Sovetskaya Rossiya, 12 Apr 58)

A plant of the Tatarskiy Sovnarkhoz is the producer of the Kama 1x8-mm [i.e., single-run 8mm] movie camera.

The Moscow Phonograph Plant is the producer of the Turist 2x8-mm [i.e., double-run 8 mm] movie camera.

The Kiev [Optical Machinery] Plant is the producer of the Kiev 16-mm movie camera.

A plant of the Tatarskiy Sovnarkhoz has developed the 8P-1 8-mm movie projector.

The Moscow Phonograph Plant is the producer of the 16-KPZL-3, the Lyubitel'-8, and the Lyubitel'-6 movie projectors.

The Moscow Design Bureau [of the Ministry of Culture?] has developed the new Shkol'nik 16-mm movie projector. (Moscow, Tekhnika Kino i Televideniya, Jun 58, pp 96-97)

E. Recording Equipment

In 1955, the Leningrad Kinap Plant, the Central Design Bureau of the Ministry of Culture USSR, and the Lenfil'm motion-picture studios, in collaboration with the Leningrad Institute of Motion-Picture Engineers, developed the type KZM-4 and KZM-5 apparatus for single-track and stereophonic magnetic sound recording for motion-picture films.

In 1957, the KZM-4 apparatus was modernized by the plant and renamed the KZM-6 (2). Its specifications are as follows:

Sound carrier speed	456 mm per second
Sound carrier	25-mm magnetic tape with standard perforations
Maximum film reel length	320 meters
Frequency characteristic	50-10,000 cycles, with deviation up to plus or minus 1.5 decibels
	40-12,000 cycles, with deviation up to plus or minus 3 decibels
Power supply	220 volts, 50 cycles, 3-phase

(Full information is given in source). (Moscow, Tekhnika Kino i Televideniya, Jun 56, p 63)

(2) Photo available in source, p 63

At present, the Vil'nyus El'fa Plant is mastering the production of the Spalis tape recorder, which should have been in production in 1957. (Vil'nyus, Sovetskaya Litva, 25 Feb 58)

V. ELECTRICAL PRODUCTS

A. Relays and Controls

The Yerevan plant for the production of relays, which is to go into operation in 1958-1959, will provide the groundwork for a radio engineering industry in the Armenian SSR. In the years to follow, new types of production of this branch of industry will be developed. (Yerevan, Kommunist, 12 Feb 58)

The Kiev Relay and Automatics Plant is the producer of the TRA, TRV, TR-200, TR-170, and T-50 bimetallic relays. (Moscow, Knizhnaya Letopis', No 26, 1958, p 32)

The Cheboksary Electrical Equipment Plant is the producer of the series BNV and PNV magnetic control stations. (Moscow, Standartizatsiya, No 3, May-Jun 58, p 85)

The Leningrad Elektrosila Plant is the producer of the KN2200 control stations. (Moscow, Knizhnaya Letopis', No 26, 1958, p 32)

B. Wire and Cable

USSR industry produces cables containing two or four coaxial pairs, both with and without symmetrical quad lays. In addition, each cable has five quads with cores .9 mm in diameter, which are wrapped in paper insulation and twisted into the shape of a star. The cables are usually manufactured in 210-meter lengths. (Moscow, Vestnik Svyazi, Jun 58, p 13)

The Tallin Eesti Kaabel' Plant uses several thousand tons of nonferrous metals per year.

In 1954 and 1955, the plant had a high nonferrous metals scrappage rate, which made it operate at a loss. In 1954, it had an above-norm consumption of 259 tons of copper and 22 tons of aluminum. During the first half of 1955, it had an above-norm consumption of 82.5 tons of copper and 1.7 tons of aluminum. But, during the second half of 1955 [when Severov is known to have become director of the plant], it began to meet the norm. In 1956 and 1957, the plant saved a total of 102 tons of copper and 8 tons of aluminum, and was able to produce about 6,000 km of electric wire with the saved metal.

Now scrappage occurs at the plant only where waste of metal is wholly unavoidable, and the plant is doing all it can to cut this waste. However, the Estonian Sovnarkhoz (Council of National Economy) gives little aid in this matter. In 1958, it planned for

the plant to turn over double the amount of scrap provided for by the norm, or triple the amount of metal actually scrapped at the plant. The plant has no other sources for scrap metal. Such an assignment does not promote a metal economy drive. Therefore, the sovnarkhoz should revise its scrap collection plan. -- D. Severov, Director, Eesti Kaabel' Plant (Tallin, Sovetskaya Estoniya, 29 Mar 58)

The Bendery Moldavkabel' Plant (Benderskiy zavod "Moldavkabel") produced 250 sorter-winnowers, 400 sunflower seed cleaners, and many other machines in 1957. During the first half of 1958, it will produce 50 grain cleaning machines and 50 churns. In addition, it will produce 6 million rubles' worth of cable, which will be used for the electrification of kolkhozes. -- A. Serov, Director, Bendery Moldavkabel' Plant (Kishinev, Sovetskaya Moldaviya, 18 Mar 58)

[Comment: This appears to be a new plant.]

C. Insulators

Recently, new types of insulators have been developed and put into production, and new mechanized production methods have been put into use. The [Leningrad] Proletariy Plant and the [Slavyansk] Plant imeni Artem have begun producing rod-type insulators instead of the ShT-35 pin-type insulators. A number of plants have begun producing large insulators for 400- and 500-kv transmission lines, and new type P-11 suspension insulators.

Plants, aided by a scientific research institute, have learned to use new class a and b steatite materials, capacitor-type piezoceramic materials containing titanium, semiconductor materials, heat and arc resistant materials, and other materials for making insulators. A number of plants have begun producing insulators out of low-moisture compounds, thus eliminating predrying operations.

A number of plants have set up constant-flow lines for the production of strain and rod-type insulators and have learned to use metal molds instead of gypsum molds for forming insulators. More than 70 percent of all USSR-produced insulators are baked in continuous tunnel ovens.

Despite all their achievements, USSR insulator plants fail to meet the qualitative and quantitative demand of the national economy, and some sectors of the national economy find it necessary in certain cases to import insulators from abroad.

The existing situation in the electric insulator industry results from its lag behind the growth rate of the electrical apparatus, machine building, and other industries. Despite all past efforts toward mechanization and local automation, many manual and even dangerous operations still exist.

The production of high-voltage insulators is based mainly on the use of electrical porcelain with an average stability of 750-900 kg per sq cm, puncture voltages up to 25 kv per mm, and a dielectric loss angle tangent of about 4 percent. These specifications do not provide for the production of type P-16 suspension insulators, small insulators similar to those made by the "Nippon" firm, air circuit breaker insulators with internal pressures up to 130 atmospheres, and a number of other insulators with high electrical and mechanical characteristics.

The introduction of new production facilities, the modernization of equipment, and the development of new types of mechanized and automated equipment for processing insulators has been much too slow. There are no special machine building facilities for supplying industrial equipment to insulator plants. The work of plant design bureaus and scientific research institutes in developing new equipment is not coordinated.

Existing insulator plants and those under construction are equipped mainly by importing equipment from abroad and to a large extent by using obsolete designs.

Insulator plants receive raw materials in a crude state with great variations in mineralogical composition. Foreign insulator firms, on the other hand, receive all raw materials in a dressed, stamped, and packed form from special stamping and dressing factories.

The first technical conference on the electric insulator industry, which was held 12-15 March 1958, was sponsored by the State Scientific and Technical Committee of the Council of Ministers USSR and Gosplan USSR. The conference had 198 participants, including representatives of the Academy of Sciences USSR, scientific research and educational institutes, special laboratories, planning organizations, the Ministry of Electric Power Stations, the Ministry of Communications, the Ministry of Agriculture, sovnarkhozes, electric porcelain plants, structural ceramics plants, and a number of other organizations.

I. A. Syromyatnikov, doctor of technical sciences, a member of the State Scientific and Technical Committee, opened the conference.

V. K. Kozhukhov, candidate of technical sciences, of the VEI (All-Union Electrical Engineering Institute), and engineers M. A. Morozov and F. I. Rapota of Teploelektroproyekt [All-Union Institute for Planning Thermal Electric Power Stations] spoke on the current requirements for insulators.

Engr T. K. Glazunov of the GIEKI [State Scientific Research Electroceramics Institute] spoke on methods of introducing new technology in the electric insulator industry.

Engr Ye. G. Solov'yev of the [Moscow] Izolyator Plant and M. P. Baginskiy of the Central Scientific Research Laboratory of the Armset' [State Hardware and Insulator] Trust spoke about new types and designs of electric insulators.

Representatives of the [Moscow] Izolyator Plant, the [Gzhel'] Elektroizolyator Plant, the [Leningrad] Proletariy Plant, the [Tokarevskiy] Plant imeni Pervoye Maya, the [Slavyansk] Plant imeni Artem, and the Slavyansk Elektroizolyator Plant spoke on the actual and planned introduction of new technology in electric insulator plants.

Prof A. I. Avtustinik spoke on the automation of the production of high-voltage insulators and their high-speed baking.

A. A. Kopeykin of NII Stroykeramiki [Scientific Research Institute of Structural Ceramics?] spoke on current requirements for structural ceramics and the organization of constant-flow production lines.

V. I. Serebrov of a "Strommashina" Plant spoke on the 1958 production and future development of equipment for electroceramics plants.

The final address was made by M. V. Khomyakov of the High-Voltage System of Mosenergo [Moscow Regional Electric Power Administration] on the operation of insulators in the power system.

The conference considered that certain steps should be taken to satisfy the needs of the electrical industry and power lines. High-voltage insulators with high mechanical characteristics should be organized first of all at the [Leningrad] Proletariy Plant, the [Gzhel'] Elektroizolyator Plant, the [Kamyshlov] Uralizolyator Plant, the [Moscow] Izolyator Plant, and the [Slavyansk] Plant imeni Artem. It was recommended that the KM-1 type porcelain compound, otherwise known as "hard porcelain," be used. The development of high-durability small suspension insulators of the type made by the "Nippon" firm should be accelerated so that their series production can begin in 1958. The development of all types of bushings should be accelerated by the Izolyator Plant and the Special Design Bureau for Capacitor Bushings, in order to make it possible to stop production of barrier type bushings by 1959 and to develop small capacitor bushings with solid insulation instead of oil for voltages of 110 and 220 kv.

The conference noted the necessity for ceasing the production of obsolete products, such as the ShT-35 pin-type insulators and the OA and OB strain insulators.

It was resolved that in 1958 and 1959, more than 30 constant-flow lines for the production of various insulators would be built, and that all existing intermittent-type rotary hearths would be replaced by tunnel ovens.

The basic trend in improving drying processes must be the utilization of conveyer and tunnel dryers with remote controls; of combined processes of predrying and drying; and of new control instruments, in consideration of the intensity of losses due to dampness and atmospheric shrinkage of insulators.

In [glaze] baking, the basic trend should be the replacement of batch ovens with continuous tunnel types.

The conference noted that it was necessary to organize the production of industrial equipment for the electric insulator industry at the Mogilev Stroymashina Plant, including 1,000-7,000-liter ball mills, pumps with capacities up to 12 liters per hour, vacuum presses for low-moisture compounds, semiautomatic presses, and high-power filter presses.

As far as materials are concerned, it was resolved to request Gosplan USSR to provide for the construction and operation in the next 2 or 3 years of pegmatite grinding and dressing plants in areas where feldspar materials have been found in the Karel'skaya ASSR, the Ukrainian SSR, the Urals, and Krasnoyarskiy Kray. Thus insulator plants would be supplied with these fine stone-like components for furnace charges of electric porcelain compounds.

In connection with the plans for the reconstruction and further development of existing insulator plants, provisions should be made, from 1958 to 1960, for the construction of enclosed storage facilities for storing, preparing, and processing ceramic raw materials. Provisions should be made in the plans for the ceramic plants in Engel's and Irbit to supply fully the needs of insulator plants for Uralite balls according to the technical specifications prescribed by the Ceramics Institute.

Provisions should be made in the plans of the Ministry of Geology for the continuation of geological prospecting for ceramic raw materials, especially refractory clays and pegmatite, in the Urals, Siberia, the Soviet Far East, southern USSR, and Moskovskaya Oblast (the area around Gzhel').

NIIstroykeramika should develop the process of a nonelectrolytic water dressing of kaolin clays.

Gosplan Ukrainian SSR and Gosplan RSFSR should be requested to organize special sections at kaolin combines for the production of clay according to the technical requirements of electric insulator plants. -- Engr P. Z. Nikitin, State Scientific and Technical Committee of the Council of Ministers USSR (Moscow, Vestnik Elektropromyshlennosti, Jun 58, pp 69-72)

Type RSh-4 installation-type porcelain roller insulators, 24 mm in height and 20 mm in diameter, retail at 90 rubles per set of ten. (Moscow, Byulleten' Roznichnykh Tsen, No 17, Jun 58, p 44)

Yu. M. Lebedev is director of the [Khot'kovo] Elektroizolit Plant. (Moscow, Leninskoye Znamya, 23 Mar 58)

D. Plant Operations

The Serpukhov Condenser Plant uses complex equipment (3) for its winding operations. (Moscow, Leninskoye Znamya, 2 Mar 58)

(3) Photo available in source, p 2, bottom

The Moscow Electrical Products Plant No 1 [zavod elektroizdeliy No 1] is located at Nizhniy Tishinskiy pereulok, 6. (Moscow, Vechernyaya Moskva, 25 Feb 58)

Sigov is director of the Kaluga Motor Vehicle and Motorcycle Electrical Equipment Plant (Kaluzhskiy zavod avtomotoelektrooborudovaniya).

The Kaluga Electrical Machinery Plant (Kaluzhskiy elektromekhani - cheskiyzavod) has a high overtime outlay. The harmful practice of postponing workers' days-off is also an ingrained habit at the plant. (Moscow, Trud, 14 Feb 58)

A precision casting shop will soon go into operation at the Moscow Searchlight Plant. Spot welding has been introduced in the Joining and Welding Shop. Electric percussion welding of aluminum is being employed in this shop also.

Aleksey Ivanovich Baykov is chief metallurgist of the plant. (Moscow, Vechernyaya Moskva, 14 Feb 58)

The Yerevan Electric Motor Plant produces sizes 1 and 2 electric motors. It has also produced experimental high-frequency motors. In 1958, it was assigned to produce special electric motors for vending machines.

In the second quarter of 1958, the plant will receive a new production building. (Yerevan, Kommunist, 16 Feb 58)

Recently, the Vil'nyus Electric Welding Equipment Plant shipped a carload of TSD-1000 transformers to the Leningrad Elektrik Plant and four carloads of ASB-300 electric welding units to Cherkessk in Stavropol'skiy Kray. A large consignment of equipment was also sent to the Donbass, Gor'kovskaya Oblast, and the Kazakh SSR.

The plant is now filling orders for Magadan, Sakhalin, and Kamchatka. In March, it will send various types of welding units and transformers to these areas. It is readying much equipment for shipment to geological exploration expeditions in the Urals, Siberia, and Kazakhstan. (Vil'nyus, Sovetskaya Litva, 27 Mar 58)

The Vil'nyus Electric Welding Equipment Plant is producing new single-station type STE-24 welding transformers in place of the earlier-produced type STE-34. This plant has produced the first USSR-made unit for welding aluminum wires, the USAP-1. This machine will be exhibited this spring at the Leipzig Fair and at a fair in Milan. The plant is to produce type STN-500-51 welding transformers utilizing aluminum windings. -- P. Kul'vets, Deputy Chairman, Lithuanian Sovnarkhoz (Vil'nyus, Sovetskaya Litva, 25 Feb 58)

* * *